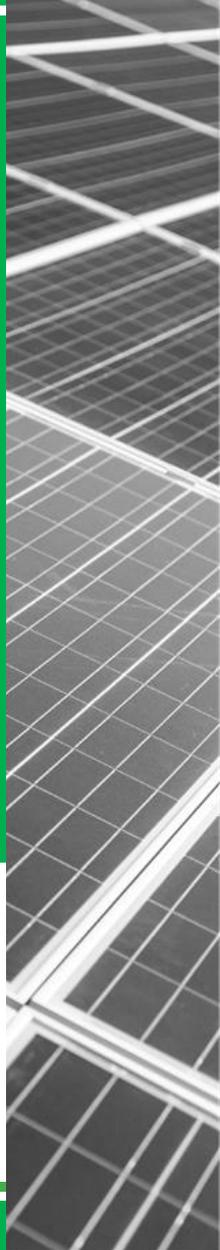




COLUMBIA COMMUNITY LAND TRUST - CULLIMORE APARTMENTS

REQUEST FOR QUALIFICATIONS/PROPOSAL SUBMISSION

Jeremy Nolen, Project Executive
PHONE: 573.777.4811
EMAIL: jnolen@goenergylink.com
DATE: March 18th, 2021



ENERGYLINK
AN ENERGY SERVICE COMPANY ●●●



1. COVER LETTER

TO: RANDY COLE

FROM: JEREMY NOLEN

RE: CCLT – CULLIMORE COTTAGES SOLAR RFP

DATE: 3/18/2021

EnergyLink is grateful for the opportunity to work on this design-build project with the Cullimore Cottages.

Our team at EnergyLink has put together the following proposal for the project. The following are some highlights for the project:

1. Project Costs: \$47,670
2. System Details:
 - 1100 Rear Coats Street – 4,861 kWh
 - 1102 Rear Coats Street – 5,948 kWh
 - 1104 Rear Coats Street – 4,861 kWh
 - 1106 Rear Coats Street – 5,948 kWh
 - 1108 Rear Coats Street – 4,861 kWh
 - * assumes no shading
3. Estimate Annual Savings: \$2,529
4. Estimated Rebate (if applicable): \$7,250
5. Estimated Payback: 12 years
6. System Details:
 - Trina 410W modules (x50)
 - SolarEdge 4 kW inverters
 - Ironridge Racking

*see financial assumptions on page 12

As a local solar installer, we have worked with Columbia Water and Light on multiple projects throughout the city. We are confident that this can be a successful project.

Our team has provided information regarding the design and details involved with this project. If there is any more information that might be useful, EnergyLink will provide upon request.

Thank you,

Jeremy Nolen, Project Executive, EnergyLink

2. EXECUTIVE SUMMARY

The following Executive Summary lays out the Key Provisions, Understanding of District's Goals, Pricing, Respondent's Role, System Description, Financing, Experience, and Key Timeline Dates.

Contact Information

Legal Business Entity Name: EnergyLink LLC

Address of Principal Place of Business: 501 Fay St. #106, Columbia, MO 65201

Primary Point of Contact: Jeremy Nolen, jnolen@goenergylink.com

Company Telephone Number: 573.777.4811

Established: May 2010

System Design

We have prepared 5 solar PV arrays for the properties located 1100-1108 Rear Coats Street, all sized at 4 kW AC. Here are system details:

Equipment (see spec sheets attached):

- Trina 410W monofacial (50 modules total)
- Solar Edge Inverters
- Ironridge Flush Mount Racking

Site Specific System Details:

- 1100 Rear Coats Street – 4,861 kWh produced in Year 1
- 1102 Rear Coats Street – 5,948 kWh produced in Year 1
- 1104 Rear Coats Street – 4,861 kWh produced in Year 1
- 1106 Rear Coats Street – 5,948 kWh produced in Year 1
- 1108 Rear Coats Street – 4,861 kWh produced in Year 1

*kWh production figures are assuming no shading, upon award, EnergyLink will conduct a pathfinder analysis for the final production figures



Agreement for Project Specification & Payment



EnergyLink LLC	Customer
Officer: Jeremy Nolen	Name: CCLT - Cullimore Apartments
Phone: 573.777.4811	Address: 1100-1108 Rear Coats Street
Email: jnolen@goenergylink.com	City/State: Columbia MO

Project Specifications			
<u>Quantity</u>	<u>Type</u>	<u>Description of Work</u>	<u>Price</u>
5	Arrays	4.00 kW DC/4 kW AC Rooftop Solar Array 10 Trina 410W Panels Solar Edge Inverters IronRidge/Unirack Asphalt Shingle Mount Single Line Design BOS wiring and conduit Installation Labor Interconnection/Net-Metering/Rebate Documentation Roof Penetration (if necessary)	\$47,670.00
Total Cost, Taxes and Labor Included:			\$47,670.00

Warranty Provided: All available material warranties apply. EnergyLink carries a 5-year labor warranty. Products and services are subject to pricing and availability.

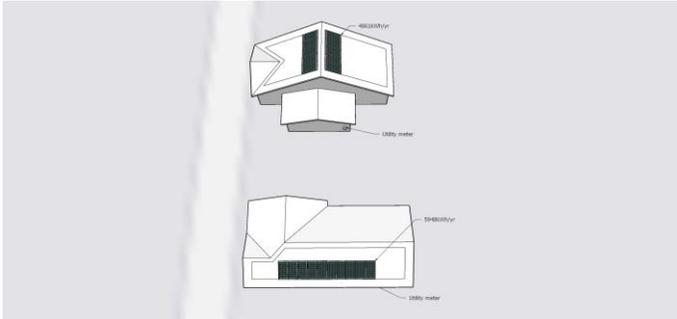
Acceptance of Proposal: The above prices, specifications, and conditions are satisfactory and are hereby accepted. By signing this Agreement, the individual named above authorizes EnergyLink to complete the work as specified herein in exchange for payments as scheduled above.



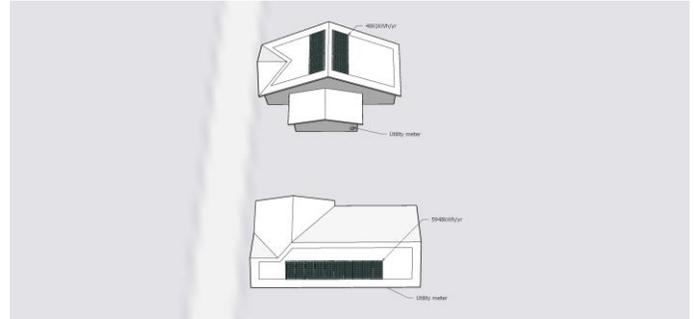
SYSTEM DESIGN AND EXPECTED TIMELINE

Technical Approach, Design, Equipment, Installation

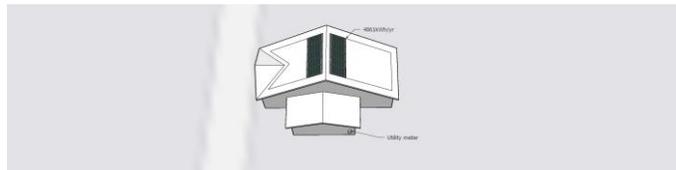
Our team has designed this project around the requests in the RFP, as well as the shading analysis to be worked around with the units. We have attached a similar designed system, which will be close to the design for these apartments.



1100 and 1102 sites



1104 and 1106 sites



1108 site

Key Timeline Dates

April 5, 2021 – Contract Execution

April 5, 2021 – Formal Design, Interconnection/Rebates Apps, Permitting

May 5th, 2021 – Procurement of Materials and Staging of Construction Site

May 11th, 2021- June 1, 2021 – System Assembly

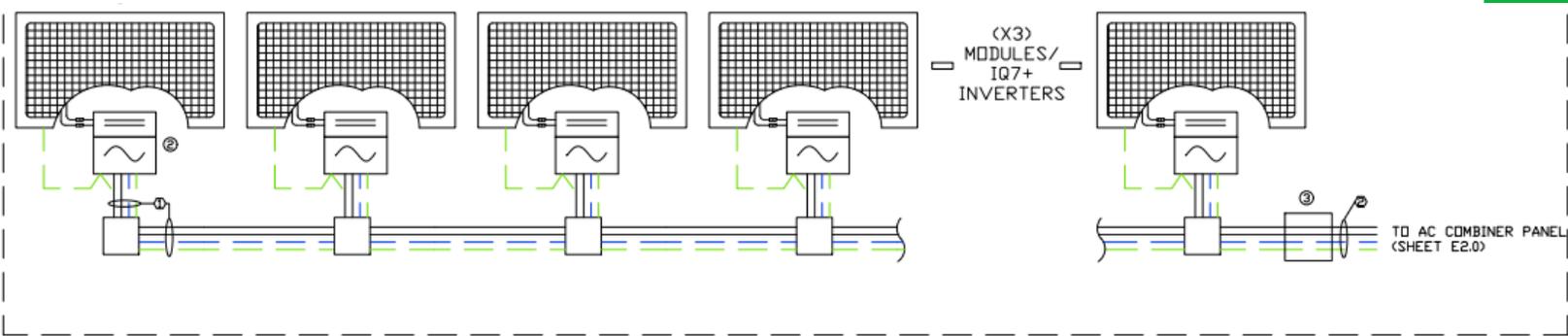
June 1, 2021 – Commissioning/Interconnection

June 15, 2021 – On-Going System Monitoring

*Subject to weather delays



EXAMPLE SINGLE LINE DIAGRAM



ARRAY SPECIFICATIONS
 2.60 kW
 (8) S-ENERGY 325W MODULES
 1 MODULE PER INVERTER
 8 INVERTERS IN A BRANCH

MODULE SPECIFICATIONS
 MANUFACTURER: S-ENERGY
 MODEL: SN325P-10
 VDC: 46.0 V
 VMP: 37.3 V
 ISC: 9.10 A
 IMP: 8.72 A
 α VDC: -0.301%/°C

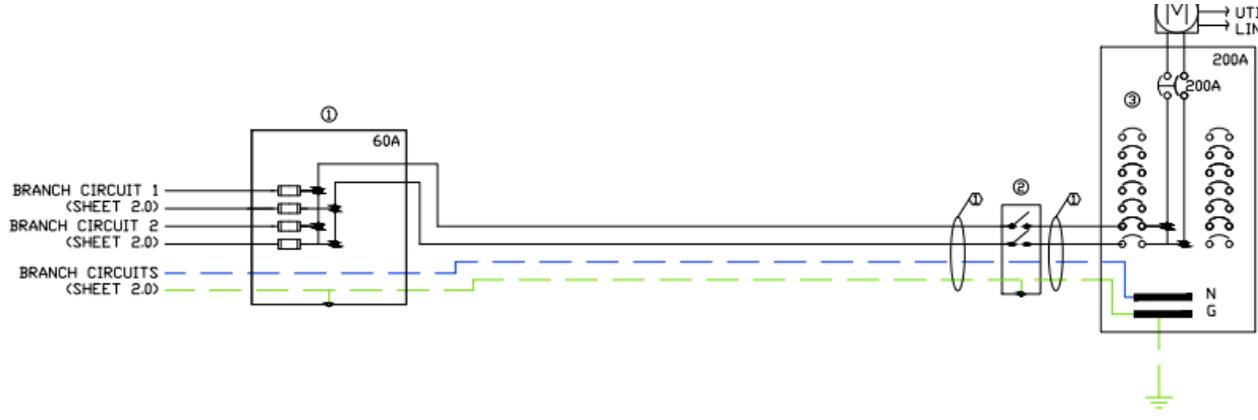
INVERTER SPECIFICATIONS
 MANUFACTURER: ENPHASE
 MODEL: IQ7+
 INVERTER OUTPUT: 290 W
 INVERTER VOLTAGE: 240 V
 INVERTER CURRENT: 1.21 A
 CONT. CURRENT: 1.51 A

EQUIPMENT SCHEDULE
 ① (8) S-ENERGY SN325P-10 SOLAR MODULES.
 ② ENPHASE IQ7+ GRID-TIE INVERTER, 240VAC OUTPUT, WITH INTERNAL RAPID SHUTDOWN, UL 1741 AND IEEE 1547 COMPLIANT (15 PER BRANCH).
 ③ OUTDOOR JUNCTION BOX.

FEEDER SCHEDULE
 ① MANUFACTURER SUPPLIED CABLE.
 ② PROVIDE 3 #10 AWG THWN-2, 1 #10 AWG (G) IN A 1/2" EMT C.

POWER SOURCE CALCULATIONS
 OPERATING CURRENT:
 $8.72 \text{ A} \times 1 \times 1.25 = 10.90 \text{ A}$
 OPERATING VOLTAGE:
 $37.3 \text{ V} \times 1 \times 1.14 = 42.52 \text{ V}$
 MAXIMUM VOLTAGE:
 $46.0 \times 1 \times 1.14 = 52.44 \text{ V}$
 SHORT CIRCUIT CURRENT:
 $9.10 \text{ A} \times 1 \times 1.25 = 11.38 \text{ A}$

GENERAL NOTES
 (1) MINIMUM PERMANENT SIGNAGE (YELLOW PLACARD, BLACK LETTERING):
 (A) ON COVER OF VISIBLE UTILITY DISCONNECT - "PHOTOVOLTAIC SYSTEM DISCONNECT"
 (B) ON FRONT COVER OF MAIN SERVICE PANEL "WARNING: THIS PANEL ALSO FED BY SOLAR ELECTRIC SOURCE."
 (C) ON BILLING METER AND PV PROD METER - "PHOTOVOLTAIC SYSTEM CONNECTED"
 (2) SIGNAGE OTHER THAN THAT GIVEN IN (1) ABOVE MAY BE REQUIRED
 (3) PV MODULES, STRING COMBINERS, GFI, DC DISCONNECT, INVERTER, AC DISCONNECT, AND UTILITY DISCONNECT ARE UL-LISTED.
 (4) ALL GROUND SYSTEMS ARE BONDED TOGETHER.
 (5) INTERCONNECTION WILL BE PER LOCAL UTILITY REQUIREMENTS (DOUBLE-POLE CB OR LINE SIDE TAP).
 (6) SYSTEM CANNOT BE TESTED ON LINE UNTIL APPROVED BY UTILITY.
 (7) THE PHOTOVOLTAIC SYSTEM WILL BE INSTALLED IN COMPLIANCE WITH ARTICLE 690 OF THE 2014 NEC.
 (8) ALL WIRES MUST BE COPPER AND SIZED FOR A MAXIMUM 2.0% VOLTAGE DROP.



ARRAY SPECIFICATIONS
 5.20 kW
 (16) S-ENERGY 325W MODULES
 1 MODULE PER INVERTER
 8 INVERTERS IN A BRANCH (X2)

MODULE SPECIFICATIONS
 MANUFACTURER: S-ENERGY
 MODEL: SN325P-10
 VDC: 46.0 V
 VMP: 37.3 V
 ISC: 9.10 A
 IMP: 8.72 A
 α VDC: -0.301%/°C

INVERTER SPECIFICATIONS
 MANUFACTURER: ENPHASE
 MODEL: IQ7+INVERTER
 OUTPUT: 290 W
 INVERTER VOLTAGE: 240 V
 INVERTER CURRENT: 1.21 A
 CONT. CURRENT: 1.51 A

EQUIPMENT SCHEDULE
 ① ENPHASE AC AGGREGATOR BOX WITH (4X) 20A FUSES.
 ② PROVIDE A 2-POLE 240VAC 60A OUTDOOR, NEMA 3R SERVICE RATED DISCONNECT. PHOTOVOLTAIC DISCONNECT SHALL BE VISIBLE, ACCESSIBLE, LOCKABLE, LABELED "PHOTOVOLTAIC AC DISCONNECT" WITHIN 10 FEET OF ELECTRICAL METER.
 ③ PROVIDE A 2-POLE 40A CB IN EXISTING 240V MAIN ELECTRICAL PANEL WITH 200A MAIN BREAKER AND 200A BUSS.

FEEDER SCHEDULE
 ① PROVIDE 3 #8 AWG THWN, 1 #10 AWG (G) IN A 3/4" EMT C.

GENERAL NOTES
 (1) MINIMUM PERMANENT SIGNAGE (YELLOW PLACARD, BLACK LETTERING):
 (A) ON COVER OF VISIBLE UTILITY DISCONNECT - "PHOTOVOLTAIC SYSTEM DISCONNECT"
 (B) ON FRONT COVER OF MAIN SERVICE PANEL "WARNING: THIS PANEL ALSO FED BY SOLAR ELECTRIC SOURCE."
 (C) ON BILLING METER AND PV PROD METER - "PHOTOVOLTAIC SYSTEM DISCONNECT"
 (2) SIGNAGE OTHER THAN THAT GIVEN IN (1) ABOVE MAY BE REQUIRED
 (3) PV MODULES, STRING COMBINERS, GFI, DC DISCONNECT, INVERTER, AC DISCONNECT, AND UTILITY DISCONNECT ARE UL-LISTED.
 (4) ALL GROUND SYSTEMS ARE BONDED TOGETHER.
 (5) INTERCONNECTION WILL BE PER LOCAL UTILITY REQUIREMENTS (DOUBLE-POLE CB OR LINE SIDE TAP).
 (6) SYSTEM CANNOT BE TESTED ON LINE UNTIL APPROVED BY UTILITY.
 (7) THE PHOTOVOLTAIC SYSTEM WILL BE INSTALLED IN COMPLIANCE WITH ARTICLE 690 OF THE 2014 NEC.

EXAMPLE SINGLE LINE DIAGRAM (CONT.)

ARRAY SPECIFICATIONS

5.20 kW
(16) S-ENERGY 325W MODULES
1 MODULE PER INVERTER
8 INVERTERS PER BRANCH (X2)

MODULES SPECIFICATIONS

MANUFACTURER: S-ENERGY
MODEL: SN325P-10
VDC: 46.0 V
VMP: 37.3 V
ISC: 9.10 A
IMP: 8.72 A
 α VDC: -0.301%/°C

INVERTER SPECIFICATIONS

MANUFACTURER: ENPHASE
MODEL: IQ7+
INVERTER OUTPUT: 290 W
INVERTER VOLTAGE: 240 V
INVERTER CURRENT: 1.21 A
CONT. CURRENT: 1.51 A

TEMPERATURE FOR (65203) PER ASHRAE:

LOWEST: -21°C -6°F
HIGHEST: 34°C 93°F

TEMPERATURE CALCULATIONS:

$52.44V = 46.0V \times (1 + ((-21^\circ - 25^\circ C) \times -0.301\%/^\circ C))$
 $93^\circ F + 40^\circ F = 133^\circ F$
0.77 CORRECTION FACTOR FOR 90°C
0.65 CORRECTION FACTOR FOR 75°C
(TABLE 310.15B2b)

MODULE TO INVERTER

(MANUFACTURER WIRE)
VOLTAGE: $52.44V \times 1 = 52.44 V$
AMPS: $9.10A \times 1.25 = 11.38 A$

INVERTER TO AC COMBINER

#10 AWG THWN-2, #10(G)
INVERTERS IN A BRANCH: 8
AMPS: $290W \times 8 = 2.32kW$
VOLTAGE: 240 V
AMPS: $1.21A \times 8 \times 1.25 = 12.10 A$
BREAKER: 20A

AC COMBINER TO AC DISCONNECT

#8 AWG THWN-2, #10(G)
TOTAL INVERTERS: 16
OUTPUT: $290W \times 16 = 4.64kW$
VOLTAGE: 240 V
AMPS: $1.21A \times 16 \times 1.25 = 24.20 A$
BREAKER: 40A

AC DISCONNECT TO MAIN PANEL

#8 AWG THWN-2, #10(G)
TOTAL INVERTERS: 16
OUTPUT: $290W \times 16 = 4.64kW$
VOLTAGE: 240 V
AMPS: $1.21A \times 16 \times 1.25 = 24.20 A$
BREAKER: 40A

LOAD SIDE INTERCONNECTION

MAIN BUS: 200 A
ALLOWABLE: $200A \times 120\% = 240A$
 $200 A \text{ MAIN} + 40 A \text{ PV} = 240 A$
 $240 A = 240 A$

SYSTEM MEETS NEC 690.64 & 705.12(D)

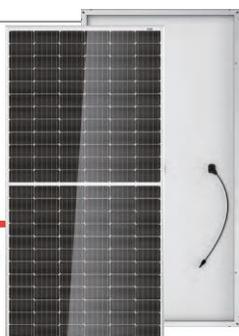


PV MODULE - SPEC SHEET

We selected Trina 400 Watt panels for this project. EnergyLink has had continued success with Trina products and have used them across a broad range of applications. The proposed 20 kW array would be composed of 50 of these panels.

Mono Multi Solutions

THE TALLMAX^M FRAMED 144 HALF-CELL MODULE



144-Cell MONOCRYSTALLINE MODULE

380-410W POWER OUTPUT RANGE

20.2% MAXIMUM EFFICIENCY

0~+5W POSITIVE POWER TOLERANCE

PRODUCTS: TSM-DE15H(B) | COLOR OF FRAME: Silver | POWER RANGE: 385-410W

- High power output**
 - Reduce BOS cost with high power bin and 1500V system voltage
 - New cell string layout and split J-box location reduces the energy loss caused by inter-row shading
 - Lower resistance of half-cut cells ensures higher power
- High energy generation, low LCOE**
 - Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
 - Integrated LRF (Light Redirecting Film) to enhance power
 - Low P_{max} temp coefficient (-0.36%) increases energy production
 - Better anti-shading performance and lower operating temperature

- Certified to perform in highly challenging environments**
 - High PID resistance through cell process and module material control
 - Resistant to salt, acid, sand, and ammonia
 - Certified to 5400 Pa positive load and 2400 Pa negative load

- Easy to install, wide application**
 - Frame design enables compatibility with standard installation methods
 - Deployable for ground mounted and rooftop projects
 - Safe and easy to transport, handle, and install



Founded in 1997, Trina Solar is the world's leading total solutions provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

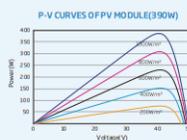
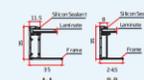
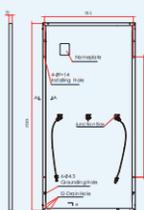
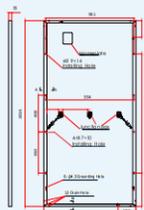
Comprehensive Products and System Certificates
 IEC61215/IEC61730/UL1703/IEC61701/IEC62716
 ISO 9001: Quality Management System
 ISO 14001: Environmental Management System
 ISO 14064: Greenhouse Gases Emissions Verification
 OHSAS 18001: Occupation Health and Safety Management System



TALLMAX^M

FRAMED 144 HALF-CELL MODULE

DIMENSIONS OF PV MODULE (mm)



ELECTRICAL DATA (STC)

	380	385	390	395	400	405	410
Peak Power Watts-P _{max} (W)*	380	385	390	395	400	405	410
Power Output Tolerance-P _{max} (W)	0 ~ +5						
Maximum Power Voltage-V _{mp} (V)	39.6	40.1	40.5	40.8	41.1	41.4	41.7
Maximum Power Current-I _{mp} (A)	9.59	9.61	9.64	9.69	9.74	9.79	9.84
Open Circuit Voltage-V _{oc} (V)	48.1	48.5	49.7	50.1	50.4	50.8	51.2
Short Circuit Current-I _{sc} (A)	9.99	10.03	10.08	10.13	10.18	10.23	10.29
Module Efficiency η _p (%)	18.7	18.9	19.2	19.4	19.7	19.9	20.2

STC: Irradiance 1000W/m²; Cell Temperature 25°C; Air Mass 1.5
 *Measurement tolerance: ± 3%

ELECTRICAL DATA (NMOT)

	287	291	296	299	303	307	311
Maximum Power-P _{max} (Wp)	287	291	296	299	303	307	311
Maximum Power Voltage-V _{mp} (V)	37.6	37.9	38.6	38.9	39.1	39.4	39.7
Maximum Power Current-I _{mp} (A)	7.64	7.68	7.66	7.70	7.74	7.78	7.82
Open Circuit Voltage-V _{oc} (V)	45.4	45.8	46.9	47.3	47.6	47.9	48.3
Short Circuit Current-I _{sc} (A)	8.05	8.08	8.12	8.16	8.20	8.24	8.29

NMOT: Irradiance at 800W/m²; Ambient Temperature 20°C; Wind Speed 1m/s

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2035 × 996 × 35 mm (79.33 × 39.21 × 1.38 inches)
Weight	22.0kg (48.5lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35 mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Portrait: N 140mm/P 285mm (5.51/11.22 inches) Landscape: N 1400mm /P 1400 mm (55.12/55.12 inches)
Connector	Trina TS4/MC4-Evo2

TEMPERATURE RATINGS

NMOT (Normal Operating Temperature)	41°C (±3°C)	MAXIMUM RATINGS	Operational Temperature	-40 ~ +85°C
Temperature Coefficient of P _{max}	-0.36%/°C	Maximum System Voltage	1500V DC (IEC)	1500V DC (UL)
Temperature Coefficient of V _{oc}	-0.25%/°C	Max Series Fuse Rating	20A	
Temperature Coefficient of I _{sc}	0.04%/°C			

(Do not connect fuses in Container Boxes with two or more strings in parallel connection)

WARRANTY

12 year Product Workmanship Warranty	PACKAGING CONFIGURATION
25 year Power Warranty	Modules per box: 30 pieces
(Please refer to product warranty for details)	Modules per 40' container: 660 pieces



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
 © 2020 Trina Solar Limited. All rights reserved. Specifications included in this data sheet are subject to change without notice. Version number: TSM_DE15H(B)_EN_2020_RD_A www.trinasolar.com

INVERTER - SPEC SHEET

Due to the recent requirements with NEC 2017 (modular rapid shutdowns) and the sizes of these arrays, we believe the best solution is with microinverters for this project. We selected Enphase microinverters, which are a strong choice for the residential solar industry.



Single Phase Inverter with HD-Wave Technology

SE2200H, SE3000H, SE3500H, SE3680H, SE4000H, SE5000H, SE6000H

INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Extremely small, lightweight and easy to install
- High reliability
- Built-in module-level monitoring
- Outdoor and indoor installation
- Fixed voltage inverter for longer strings
- Smart Energy Management control
- Advanced safety feature - integrated arc fault protection
- Compatible with the StorEdge interface for StorEdge™ applications

Single Phase Inverter with HD-Wave Technology

SE2200H, SE3000H, SE3500H, SE3680H, SE4000H, SE5000H, SE6000H

	SE2200H	SE3000H	SE3500H	SE3680H	SE4000H	SE5000H	SE6000H		
OUTPUT									
Rated AC Power Output	2200	3000	3500	3680	4000	5000*	6000	VA	
Maximum AC Power Output	2200	3000	3500	3680	4000	5000*	6000	VA	
AC Output Voltage (Nominal)								230/240	VAC
AC Output Voltage Range								100 - 264.5	VAC
AC Frequency (Nominal)								50/60 ± 5	Hz
Maximum Continuous Output Current	10	14	16	16	16.5	20	27.5	A	
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds								Yes	
INPUT									
Maximum DC Power	9400	6500	5425	5700	6200	7750*	9400	W	
Transformer-less, Ungrounded								Yes	
Maximum Input Voltage								480	VDC
Nominal DC Input Voltage								380	VDC
Maximum Input Current	6.5	9	10	12.5	11.5	13.5	13.5	A _{DC}	
Reverse-Polarity Protection								Yes	
Ground-Fault Isolation Detection								6000Ω Sensitivity per Unit	
Maximum Inverter Efficiency								95.2	%
European Weighted Efficiency								98.2	%
Nighttime Power Consumption								< 2.5	W
ADDITIONAL FEATURES									
Supported Communication Interfaces								RS485, Ethernet, ZigBee (optional), WiFi (optional), Cellular (optional)	
Smart Energy Management								Export Limitation, Smart Energy, StorEdge Applications	
Arc-Fault Protection								Integrated, User Configurable (According to UL1699B)	
STANDARD COMPLIANCE									
Safety								IEC 62109-02, AS 2885	
Grid Connection Standards								AS 4777, VDE-AR-N 4105, VDE 0124-1-1, IEC 61730, IEC 61683, GB/T 19814, CEI-021, EN 50438, IEC 61731, IEC 62176, ONDGRM, IEC 61731, CEI-021, NRS 002-2-1	
Emissions								IEC 61000-4-2, IEC 61000-4-4, IEC 61000-3-1, IEC 61000-3-2, FCC Part 15, Class B	
INSTALLATION SPECIFICATIONS									
AC Output - Supported Cable Diameter								9-16	mm
AC - Supported Wire Cross Section								5-10	mm ²
DC Input								1 x MC4	2 x MC4 pair
Dimensions (H x W x D)								280 x 370 x 162	mm
Noise								< 25	dBA
Weight								7.8	kg
Cooling								Natural Convection	
Operating Temperature Range								-20 to +40* (-40°C optional)	°C
Protection Rating								IP65 - Outdoor and Indoor	

* In Germany
 ** In Germany
 For general air rating information refer to: <https://www.enphase.com/sites/default/files/en-phase-air-rating-whitepaper.pdf>

RACKING - SPEC SHEET

To install the array on an asphalt shingled roof, we decided on IronRidge's Flush Mount System.



Flush Mount System

[Datasheet](#)



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.

Strength Tested
All components evaluated for superior structural performance.

PE Certified
Pre-stamped engineering letters available in most states.

Class A Fire Rating
Certified to maintain the fire resistance rating of the existing roof.

Design Assistant
Online software makes it simple to create, share, and price projects.

UL 2703 Listed System
Entire system and components meet newest effective UL 2703 standard.

25-Year Warranty
Products guaranteed to be free of impairing defects.

[Datasheet](#)

XR Rails

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6' spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8' spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Forms secure bonding

Clamps & Grounding

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO



Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Attachments

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

Knockout Tile



Replace tiles and ensure superior waterproofing.

- Flat, S, & W tile profiles
- Form-fit compression seal
- Single-lag universal base

All Tile Hook



Mount on tile roofs with a simple, adjustable hook.

- Works on flat, S, & W tiles
- Single-socket installation
- Optional deck flashing

Resources



Design Assistant
Go from rough layout to fully engineered system. For free.
Go to IronRidge.com/design



Endorsed by FL Building Commission
Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.
Learn More at bit.ly/floridacert

WARRANTIES

Equipment and Workmanship Warranties

Post-Installation Service Warranty

5-year labor warranty covering workmanship

5-year labor warranty covering replacement of manufacturer-warranted parts

Remote monitoring and verification of system performance to ensure that any possible problems or defects are detected early

Manufacturer's warranties cover:

Panels: 10-year product warranty, 25-year production warranty

Inverters: 5-year product warranty

Racking: 25-year product warranty



ESTIMATED FINANCIALS

System Financials

Yearly Cash Flows by Category						
Year	Cash Investment	Energy Savings Income	Rebates	O&M	Net Cash Flow	Cumulative Cash Flow
1	(\$47,671)	\$2,529	\$7,250	\$0	(\$37,892)	(\$37,892)
2	\$0	\$2,624	\$0	\$0	\$2,624	(\$35,268)
3	\$0	\$2,722	\$0	\$0	\$2,722	(\$32,547)
4	\$0	\$2,823	\$0	\$0	\$2,823	(\$29,723)
5	\$0	\$2,929	\$0	\$0	\$2,929	(\$26,794)
6	\$0	\$3,039	\$0	\$0	\$3,039	(\$23,756)
7	\$0	\$3,152	\$0	\$0	\$3,152	(\$20,603)
8	\$0	\$3,270	\$0	\$0	\$3,270	(\$17,333)
9	\$0	\$3,392	\$0	\$0	\$3,392	(\$13,941)
10	\$0	\$3,519	\$0	\$0	\$3,519	(\$10,422)
11	\$0	\$3,651	\$0	\$0	\$3,651	(\$6,771)
12	\$0	\$3,787	\$0	\$0	\$3,787	(\$2,983)
13	\$0	\$3,929	\$0	(\$513)	\$3,417	\$433
14	\$0	\$4,076	\$0	(\$513)	\$3,564	\$3,997
15	\$0	\$4,228	\$0	(\$513)	\$3,716	\$7,713
16	\$0	\$4,387	\$0	(\$513)	\$3,874	\$11,587
17	\$0	\$4,551	\$0	(\$513)	\$4,038	\$15,625
18	\$0	\$4,721	\$0	\$0	\$4,721	\$20,346
19	\$0	\$4,897	\$0	\$0	\$4,897	\$25,244
20	\$0	\$5,081	\$0	\$0	\$5,081	\$30,324
21	\$0	\$5,271	\$0	\$0	\$5,271	\$35,595
22	\$0	\$5,468	\$0	\$0	\$5,468	\$41,063
23	\$0	\$5,672	\$0	\$0	\$5,672	\$46,735
24	\$0	\$5,884	\$0	\$0	\$5,884	\$52,619
25	\$0	\$6,104	\$0	\$0	\$6,104	\$58,724
26	\$0	\$6,333	\$0	\$0	\$6,333	\$65,057
27	\$0	\$6,570	\$0	\$0	\$6,570	\$71,626
28	\$0	\$6,815	\$0	\$0	\$6,815	\$78,442
29	\$0	\$7,070	\$0	\$0	\$7,070	\$85,512
30	\$0	\$7,335	\$0	\$0	\$7,335	\$92,846
Total:	(\$47,671)	\$135,830	\$7,250	(\$2,563)	\$92,846	

Assumptions

- \$.10/kWh
- 0.5% degradation rate
- 10% shading loss
- Rebate amounts:
 - 1100 - \$1,025
 - 1102 - \$2,050
 - 1104 - \$1,025
 - 1106 - \$2,050
 - 1108 - \$1,025

*rebate amounts are estimates based on CW&L current rebate program guidelines

6. PROPOSER PROFILE

Insurance

COI for liability and workers' compensation can be provided upon request.

COVERAGES		CERTIFICATE NUMBER: CL203512489		REVISION NUMBER:			
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.							
INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y		CPP100042015-00	03/01/2020	03/01/2021	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 2,000,000 \$
B	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> SCHEDULED AUTOS NON-OWNED AUTOS ONLY			CA100042018-00	03/01/2020	03/01/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Uninsured motorist \$ 100,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			UM100042019-00	09/30/2019	09/30/2020	EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				PER STATUTE OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
C	Professional Liability			CPLUS4245785	08/21/2019	08/21/2020	Each Wrongful Act 1,000,000 Aggregate 1,000,000 Pollution 1,000,000

6. PROPOSER PROFILE

Quality Control Process

EnergyLink will conduct bi-weekly construction progress meetings with professional services, subcontractors, and the District. EnergyLink will have on-site management and oversight during construction. Through subcontractor agreements assignment of scope, price and delivery will be clearly delineated prior to construction activity.

EnergyLink will work with local and state authorities for permitting and coordinate all subcontractor scope through our Project Management department. Communication is the critical pathway to success in terms of on-time, on-budget project delivery.

Prior to signed contract, EnergyLink will develop and maintain an accurate construction schedule. Through the bi-weekly Construction Progress Meetings, EnergyLink will update and recapture critical decisions to keep the promised completion schedule.

EnergyLink has accounted for typical contingency during construction, as we hold ourselves to the budget and do not rely on change orders.



7. PROJECT EXPERIENCE

Lyon Crest Student Housing Facility – Columbia, MO: 53 kW (Asphalt Shingled Rooftop)

Repeat customer – alternate asset classes. Rooftop solar, battery storage, HVAC controls with demand management BAS, EV charging station.

Sanjeev Ravipudi, MD, Owner (660.616.0022)

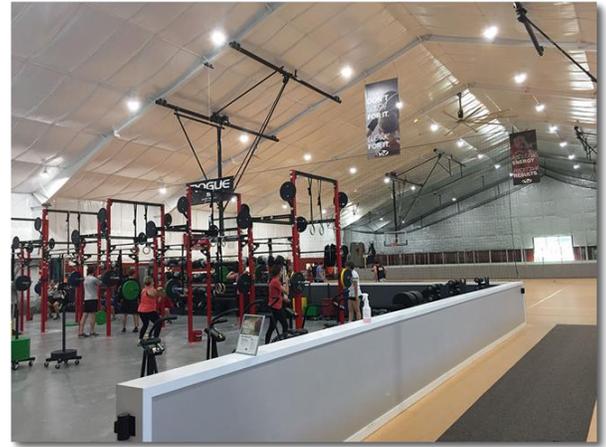


7. PROJECT EXPERIENCE

Wilson's Sports and Fitness Centers – Columbia, MO: 80 kW (Rooftop/Carport)

Repeat customer – two locations plus future projects slated. Rooftop and carport solar, insulation, high efficiency scroll chiller, ice and battery storage, LED lights, HVAC controls with demand mgmt. BAS, Time-Of-Use rate category change. Received the Mayor's Climate Action Agreement Award.

JD Abrams, President (573.881.9696)



7. PROJECT EXPERIENCE

Columbia Independent Schools – Columbia, MO: 100 kW (Rooftop)

Rooftop solar, LED lights, high efficiency RTU upgrades, recommissioning of old RTU's and DOAS, destratification, HVAC controls with demand management BAS, PACE energy bond. 2015 summer spike, demand was at 230 kW and summer kWh's equaled 152,400. EnergyLink installs smart solar with building automation package in 2018. 2019 summer spike is at 115 kW and summer kWh's equal 122,200. 63% reduction in demand and 40% reduction in kWh over the otherwise expected cost of electricity, without including natural gas savings. Received the Mayor's Climate Action Agreement Award.

Adam Dube, Head of School (573.777.9250)



Shelter Insurance Mutual Companies – Columbia, MO: 300 kW (Rooftop)

Shelter Insurance added on to their main headquarters campus in Columbia, MO with a separate facility of approximately 50,000 sq ft. With this facility, Shelter wanted to place a 300 kW solar array on the roof of this facility. In Missouri, state net-metering policy only allows for arrays of 100kW DC or less, so EnergyLink's team had to work with the local city and municipality to provide interconnection load studies to determine the on-site self-consumption of this power. This is the largest system on Columbia Water and Lights grid to date.

Brian Fick, Business Operations ([573.214.6588](tel:573.214.6588)/BFick@shelterinsurance.com)



In addition to special attention and oversight from the owner, Chris Ihler, EnergyLink will devote a management team of five, highly qualified individuals, working together to ensure the installation is completed flawlessly. This team will be focused on your project from start to finish through the duration of your project. In addition to these five primary project specialist, we will support the installation with three additional installation technicians from our team. Our installation technicians have low voltage and DC wiring experience, OSHA 10, and have worked with EnergyLink on many other rooftop, carport, and ground mount solar PV facilities.

Cully Meier – Project Engineer: Cully has an electronics engineering degree, is NABCEP Certified and will act as the designer, integrator, and commissioning agent for the installation. Cully will work with the P.E.'s to create stamped formal engineering documents, he will be onsite to provide QA and QC of every aspect for the installation and will personally install the inverter package. Cully will also provide system support after the installation is complete. Cully has worked at EnergyLink for 4 years and has designed over 10MW of commercial/industrial projects. Cell: 573.289.8252

Andrew Halpern – Construction Manager: Andrew is EnergyLink's Construction Manager. He works directly with Jeremy Nolen, the VP of Project Management to coordinate the construction of all nationwide energy projects. Andrew is pursuing his Master's in Public Administration holds a Bachelor's in Mechanical Engineering. He has a passion for sustainability and his efforts are crucial in ensuring that each project we do meets the high standards EnergyLink has set for renewable energy and energy efficiency projects. Cell: 443-845-8219

Scott Schnelle – Chief of Construction: Scott will be on the jobsite every day of construction. He will act as a supervisor and installer. He will coordinate site staging, site safety, communication between trades, and construction labor. Scott has been a partner at EnergyLink for 10 years, is BPI certified, OSHA 60, and has personally coordinated/constructed over 2.2MW of commercial PV in the Mid-Missouri area. Cell: 573.673.8579

Jeremy Nolen – VP of Project Management: Jeremy will be the dedicated project manager on this project. He will coordinate permitting, supply chain, sub-contractors, and construction logistics with our Chief of Construction and Project Engineer. Jeremy has been a PM for EnergyLink for 3 years with 9 projects under his belt, several of which were part of a larger GC contract, requiring a diverse range of sub-contractors, permitting, and logistics. Jeremy played basketball at Columbia College and has an MBA from UMKC. Cell: 334.559.9239



PROJECT TEAM (CONT.)

Employee Name	Title	Years of Experience (current firm)	Years of Experience (other firm(s))	Total Years of Experience	Active Registrations/ Certifications
Cully Meier	Project Engineer	5	17	22	NABCEP Certified
					B.S., Electronics
Andrew Halpern	Construction Manager	2	11	13	OSHA 10 Certified
					B.S., Mechanical Engineering
Scott Schnelle	Chief of Construction	10	5	15	OSHA 60
					BPI Certified
Jeremy Nolen	VP – Project Management	5	0	5	MBA , University of Missouri-Kansas City
Caelan Gander	Proposal Manager	2	0	2	BSBA, Marketing/BAS, East Asian Studies

Project Manager for this Project

Andrew Halpern

Subcontractor

Bright Electric (for AC Interconnection)

Bill Bright (Owner)

bill.bright@brightelectricllc.net



11. ADDITIONAL INFORMATION

Additional Information Available Upon Request

We were sure to constrain ourselves to the page limitations outlined in the RFP document to be respectful of your time. If you find that the images in this submittal are distorted due to their size, or if there is any desire for more documentation of our experience or credentials, please do not hesitate to reach out for clarifications. This is an incomplete list of documents we would be happy to provide:

COVID Safety Manual

Safety Manual

Quality Control Manual

Insurance Certificates

W9

Sales & Use Tax / Business License

Financial Capabilities of Firm

Approved Installer Letters

NAESCO Energy Efficient Contractor Accreditation

OSHA Logs and Certifications

Sample Operations and Maintenance Agreement

Energy Service Performance Contract

Project Reference List

Team Profiles and Work Biographies

Subcontractor Credentials / Resume

Schedule of Values

Energy Consumption / Offset Charts

Estimated Workers / Hours of Work

Non-Disclosure Forms

Closing

EnergyLink thanks the District for the opportunity to provide a submission for this project. We look forward to hearing back from you regarding your decision; good luck in the evaluation process.